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### Telegraphic and Electric Apparatus.

*(This Invention received Provisional Protection only.)*

PROVISIONAL SPECIFICATION left by Cromwell Fleetwood Varley at the Office of the Commissioners of Patents on the 8th June 1877.

CROMWELL FLEETWOOD VARLEY, of No. 2, Great Winchester Street Buildings, in the City of London. "IMPROVEMENTS IN TELEGRAPHIC AND ELECTRIC  
5 APPARATUS, PARTS OF THE INVENTION BEING APPLICABLE TO OTHER PURPOSES."

This Invention consists of improvements in the construction of condensers and of their application to telegraphic and other purposes, and is an improvement upon my Patents, No. 3453 of 1862, and No. 1044 of 1870.

The condensers are made as follows:—Plates of metal (sometimes perforated)  
10 or sheets of wire gauze are covered with an insulating material, such as silk netting, perforated paper, or collodion, or other suitable di-electric; such paper is prepared and varnished; or thin gutta percha, or vulcanized caoutchouc are used.

To prepare the paper, I sometimes steep it in strong nitric acid or in sulphuric acid, then wash and dry, and varnish.

15 I sometimes cover the metal plates or wire gauze with cotton net, having prepared the net with acid or varnish, or both.

Over the paper, net, silk, collodion, or other di-electric, thin leaves of metal, such as platinum and silver alloy, or silver or other foil are laid; or the metal plates or gauze are steeped in collodion and dried, and then are covered with the thin  
20 foil, which may also be coated with collodion; or metal plates are coated with a good insulator and then punched like perforated zinc; these are then covered with thin foil.

The stouter metal plates are united together by wire, strips of metal or solder, and the foils are united in the same manner, and a number placed in a box or other  
25 receptacle.

The one set of plates is connected to the one pole of a battery, the other pole being connected to the earth. The other set of plates is connected to the line wire generally through a large condenser.

The poles of the battery are also generally united by means of a well insulated  
30 condenser. A similar set of condensers and battery are attached to the other end of the line.

[Price 2d.]

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*Varley's Improvements in Telegraphic and Electric Apparatus.*

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When the air is caused to vibrate in the one box, the condensers give out alternating currents which re-act through the line upon the apparatus at the other end, and are caused to produce audible sounds. Or the line is attached to apparatus like those described in my Patent, No. 1044 of 1870, at one end, the other end being attached to condensers described above. 5

Instead of the battery, the plates may be charged by any apparatus for producing static electricity, such as the machine described in my Patent, No. 206 of 1860.

The paper or other insulating films are sometimes attached to frames, upon which they are stretched.

The plates are sometimes made in the form of portions of a sphere or cylinder. 10

The di-electric or metal foils are sometimes stretched over ebonite or other suitable frames, the sides of the frames being perforated when the vibrations travel parallel to the surfaces of these di-electrics.

The condensers are generally enclosed in air-tight chambers, such as perforated boxes covered with oiled silk, and the interior space kept dry by means of 15 sodium or sulphuric acid, or chloride of calcium. These air-tight chambers are sometimes filled with gas instead of air, such as carbolic acid, nitrogen, olefiant gas, and in some cases compressed air.

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